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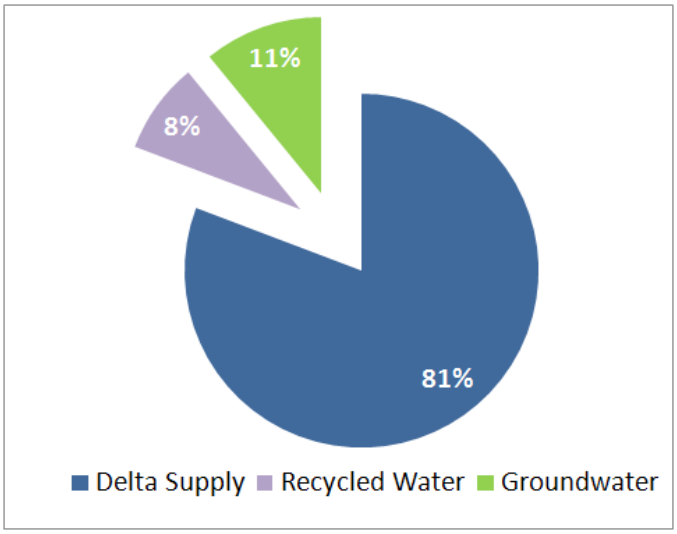
East Contra Costa County
Proposition 84 Round 1 Implementation Grant Proposal

ATTACHMENT 15 –
REDUCE DELTA WATER DEPENDENCE

PSP Requirements **Page**

IRWM Plan Commitment to Reduce Delta Water Dependence

As described in the IRWM Plan (IRWMP, Geographic Boundaries, p.2-6), the East Contra Costa County region is bounded on the north and east by the San Joaquin River and Old River, and the associated maze of waterways effectively isolates East County from the Central Valley region. The entire region derives its water supply from the Delta and drains to the Delta primarily through the Marsh Creek, Kirker Creek, and Kellogg Creek watersheds.



East Contra Costa Relies on the Delta for More than 80% of Normal Year Supply

Reducing reliance on Delta supplies is a primary objective of the ECWMA. The region is unique in that it is located entirely within the boundaries of the statutory Delta, and all of the water suppliers in the region rely on Delta supplies. Three of these water suppliers (City of Pittsburg, City of Antioch, DWD) purchase untreated Delta supplies from CCWD. Brentwood has a Delta surface supply purchased from ECCID that is diverted by CCWD at its Delta intakes, and CCWD serves a portion of the City that lies within the CCWD boundaries (IRWMP, Common Water Supply, Common Challenges, p.3-9). Located within the Delta boundaries, and with Delta water as a primary source of drinking water for the region, the agencies in East County are particularly vulnerable to Delta supply reliability issues, and they share a common commitment to reducing reliance on Delta supplies and protecting and restoring the Delta water quality and environment. The following sections describe how this commitment is articulated in the IRWM Plan, and how IRWM Plan implementation will assist in achieving these important objectives.

Supply Reliability Pressures

The East County Region faces a series of supply reliability pressures related to the Region's dependence on the Delta for more than 80% of normal year supply, and the primary way to address these challenges is to reduce the Region's reliance on Delta supplies. These challenges include the following.

- Rapid population growth: East County is an area of rapid growth. While the recent economic downturn has slowed growth in the short-term, the long-term trend of rapidly increasing population is expected to resume, presenting unique water supply reliability challenges (IRWMP, Regional Water Supply, p.2-18).
- Heavy dependence on Delta infrastructure: The reliability of Delta water supplies depends upon maintenance of the Delta levee system. Failure of the levee system could dramatically impact water quality and / or the conveyance of supplies to the region. Similarly, changes in Delta land use and water management practices, including those identified by CALFED, could increase levels of undesirable constituents at East County intakes (IRWMP, Delta Water Quality, p.2-24).
- Hydrologic, water quality, and regulatory limitations: Delta supplies are extremely vulnerable to hydrology, and can be drastically reduced in dry and critically dry years. Delta water quality is also highly variable, and when Delta water quality is poor, Delta supplies must be blended with high quality Los Vaqueros Reservoir supplies. Regulatory restrictions designed to protect endangered species can further limit the quantity of Delta water allowed to be withdrawn in a given year (IRWMP, Ecosystem Restoration/ Habitat Protection and Improvement, p.3-6).

Regional Opportunities and Objectives

Because of the Region's heavy dependence upon Delta water supplies, events that threaten the quality or quantity of this supply could have significant ramifications on the economic viability of the entire region. The ECWMA recognizes that with these common challenges comes a unique opportunity. Through the IRWM Planning process, the group has sought to leverage regional partnerships to maximize water quality and supply reliability for the region as a whole while protecting the sensitive Delta ecosystem and minimizing reliance on Delta supplies (Common Water Supply, Common Challenges, p.3-9). In December of 2010, DWR recommended a planning grant for the East County region, which will allow the region to update the IRWMP. The region will maintain their commitment to reducing reliance on Delta supplies in the future, including in the coming IRWMP update.

A key, recurring theme of the East Contra Costa Functionally Equivalent IRWMP is the importance of enhancing supply reliability. This is underscored by the three regional objectives that relate directly to this theme (IRWMP, Water Management Objectives, p.3-1):

- Maximize Dry Year Supplies
- Maximize Water Supply Reliability
- Maximize Use of Local Supplies/Reduce Dependence on Imported Supplies

Water Management Strategies

East County relies heavily on Delta supplies, with all of the water suppliers in the East County Region receiving Delta water. As a result, any projects or programs that reduce potable water use in the East County region reduce the region's dependence on Delta supplies. The Region is committed to reducing this reliance, and has expressed a commitment to implementing a variety of water management strategies targeted at reducing demands and cultivating non-Delta supply sources. The following water

management strategies were identified in the IRWM Plan as key strategies for achieving supply reliability and reducing reliance on Delta supplies (IRWMP, Water Management Strategies, p.3-5):

- Groundwater Management: Groundwater management is a critical part of maximizing supplies within the region, an objective established in the ECWSMS with the concept of pooling regional supplies. East County agencies are continuing to evaluate projects and programs with the goal of optimizing use of groundwater within the region.
- Water Conservation: Water Conservation Water conservation is an important component of the East County approach to water management, and the agencies are committed to ongoing demand management as a cornerstone to meeting future supply needs.
- Water Recycling: East County is a leader in recycled water production. Continued commitment to water reuse is a major component of the future water supply programs of these agencies. Many projects and programs within the study area focus on water reuse.

Desalination is cited as a potential water supply alternative for the participating agencies. A feasibility-level project has been proposed to evaluate the feasibility of brackish water desalination as a viable water supply alternative within the region.

Plan Implementation Priorities

The East County IRWM Plan will be implemented through completion of a series of short- and long-term priority projects. To ensure that the Regional Objectives – including Maximize Dry Year Supplies, Maximize Water Supply Reliability, and Maximize Use of Local Supplies/Reduce Dependence on Imported Supplies – would be realized through Plan implementation, Regional Objectives were used as a basis for prioritizing the region's priority short- and long-term implementation projects. Regional objectives are particularly important in the prioritization process because they reflect the common goals established by the participating agencies. As such, the criterion of Regional Objectives was assigned 50% of the overall score for a given project or program. The remainder of the score was comprised by the projects conformance to the IRWM program preferences and a series of other considerations developed by the region (IRWMP, Prioritization Criteria and Subcriteria, p.C-1).

Through this process, a series of projects and programs were identified for short- and long-term implementation. Many of these projects and programs meet the key water supply objectives identified above. Specifically, the following short- and long-term priority projects were identified at the time of initial Plan preparation. These projects, when implemented, will further the Region's objectives of Maximizing Dry Year Supplies, Maximizing Water Supply Reliability, and Maximizing Use of Local Supplies/Reduce Dependence on Imported Supplies (IRWMP, Regional Priorities, p.3-32):

Short-Term Projects

- *Antioch Recycled Water Implementation*. This urban reuse project would provide up to 530 AFY of recycled water irrigation supply to several municipal parks and a local municipal golf course, reducing the City of Antioch's overall Delta reliance by an equivalent amount.
- *City of Antioch Solids Water Treatment Plant Handling Facilities*. The City of Antioch has completed design of a water treatment plant expansion and construction of new solids handling facilities. The proposed solids handling facilities would allow for water recycling, which is not possible with the current design. As a result, it will reduce the City of Antioch's overall dependence on Delta water supply by approximately 1 million gallons per day.

- *City of Brentwood Chloramination of Wells*. This project would consist of changing the disinfection method at the existing Brentwood wells from chlorine to chloramines. This project will enable continued use of groundwater in lieu of Delta supplies.
- *City of Brentwood Irrigation Controller Replacement Program*. This project will replace existing standard irrigation controllers in residences with Intelligent Irrigation Controllers that utilize evapotranspiration, plant and soil type and micro climate to determine the irrigation schedule. Demand reductions achieved with this project will reduce reliance on Delta supplies.
- *City of Brentwood Non-Potable Distribution System Phase II*. This project would involve design and installation of a trunk reclaimed water pipeline, storage reservoir and increase the pumping capacity at the existing pump station. This project will reduce Delta reliance by reducing nonpotable demands.
- *DWD Well Utilization Project Phase I and Phase II*. This project will provide up to 3-mgd of additional supply from groundwater within the DWD service area. This project reduces reliance on Delta supplies by increasing groundwater supplies available to meet DWD demands.
- *City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan (GWMP*). This project will explore new groundwater sources and expansion of groundwater use in the City of Pittsburg to supplement water supply from the Delta, as well as developing an AB 3030 GWMP. This project will reduce reliance on Delta supplies by implementing new groundwater supplies as well as increasing understanding of groundwater supplies available in the region.
- *Pittsburg Recycled Water Implementation*. This project includes improvements to provide 615 AFY of recycled water supply to City Park, City Hotel, Stoneman Park, and the Delta View Golf Course. This project will reduce Delta reliance by reducing nonpotable demands by 615 AFY.

Long-Term Projects

- *Beacon West Well Head Arsenic Treatment*. This project is designed to reduce the current 35 ug/l arsenic levels from the groundwater serving the 30 housing units in the Beacon West complex on Bethel Island (served by DWD) to below the 10ug/l standard. This project will reduce Delta reliance by allowing DWD demands to be met with groundwater supplies.
- *Caltrans Recycled Water Implementation*. DDSD is currently completing a recycled water master plan for Caltrans, which will identify a recommended alternative for implementation. This project will reduce reliance on Delta supplies by reducing nonpotable demands.
- *City of Brentwood Non-Potable Distribution System Phase III*. This project would extend the recycled water distribution system described in Phase II for irrigation purposes throughout Brentwood. This project will reduce reliance on Delta supplies by reducing nonpotable demands.
- *Willow Park Marina Well Head Treatment*. This project is designed to reduce the current 13 ug/l arsenic levels from the groundwater serving the 162 housing units in the Willow Park Marina complex on Bethel Island (served by DWD). This project will reduce reliance on Delta supplies by allowing DWD demands to be met with groundwater supplies.

Commitment to Reducing Reliance on Delta Supplies

As evidenced by the priority projects listed above, the process used by the East County Water Management Group to prioritize IRWM projects reflects the importance of improving water supply

reliability and reducing reliance on Delta supplies. The results of the prioritization process are projects that clearly embody this objective. This finding carries two important results:

1- The process established by the ECWMA to prioritize IRWM projects for implementation favors projects that achieve the objective of Maximizing Use of Local Supplies/Reducing Dependence on Imported Supplies. As a result, as additional projects that achieve this objective are added to the plan and considered for future implementation, they will also be favored, and they are likely to become regional implementation priorities; and

2- Because many of the projects identified as priorities for implementation reflect the objective of Maximizing Use of Local Supplies/Reducing Dependence on Imported Supplies, implementing the Plan (and priority projects identified in the Plan) will further this objective.

As a result, Plan implementation will continue to further this objective, even as regional projects and programs continue to evolve. In addition, the participating agencies are committed to helping to reduce dependence on the Sacramento-San Joaquin Delta for water supply. Throughout future Plan revisions, the group intends to retain the objective of Maximizing Use of Local Supplies/Reducing Dependence on Imported Supplies.

Proposal Projects that Reduce Delta Water Dependence

Many of the proposed projects reduce dependence on Delta supplies, as described below.

- *East County Water Conservation Program*: This program involves three elements to help reduce consumption of valuable Delta and local groundwater supplies: (1) High efficiency toilet (HET) rebates; (2) Leak Detection and Repair; and (3) SMART (ET) Irrigation Controller Conversion. The HET Rebate program would cover costs to install up to 490 HETs within DWD's service area. The Leak Detection and Repair Project involves surveying approximately 7 miles of distribution system pipelines, which serve about 2,000 households within DWD's service area. The SMART (ET) irrigation controller conversion program would convert existing irrigation controllers to SMART programmable ET-based irrigation controllers for approximately 7500 residential properties within the City of Brentwood. Combined, these programs would result in 12,550 AF of savings over the life of the project (8,888 AFY of Delta water, 3,662 AF of local groundwater supplies).
- *East County Water Meter Installation Program*: This program involves two elements: (1) installation of 110 residential water meters within DWD's service area; and (2) installation of 106 meters for landscaping customers within CCWD's service area. This project is expected to provide up to 20% savings of valuable Delta and groundwater supplies.
- *Brentwood Non-Potable Water Supply Project*: This project involves extending recycled water service via installation of 9,400 linear feet of 12" pipeline to provide irrigation supply to 29 acres of municipal lands. The project will offset 88 AFY of potable water supplies, including Delta and Groundwater supplies, currently being used to irrigate these lands.
- *Pittsburg Recycled Water Pipeline Rehabilitation*: This project involves the rehabilitation of approximately 5,240 feet of 20-inch and 30-inch asbestos cement recycled water main using Cured-In-Place Pipe (CIPP). The rehabilitation will provide reliability and ensure continued delivery of approximately 526 AFY of Title 22 disinfected recycled water to Stoneman Park and Delta View Golf Course within the City of Pittsburg, reducing nonpotable demands for Delta supplies.

East County Functionally Equivalent IRWMP Excerpts Demonstrating Commitment to Reduce Dependence on Delta Water

The following table presents excerpts from the East County Functionally Equivalent IRWMP which demonstrate a commitment to reducing reliance on Delta water. Page and section references are provided.

Page	Section	Excerpt
vi	Foreword	Its land and waters support a diverse population, a booming economy, and host of sensitive species and habitats. Although it is a relatively isolated region with a distinct set of challenges and opportunities, activities in East County have ramifications for the entire California water supply system. ***With the exception of some groundwater, the entire water supply derives from the Delta and all lands drain back to the Delta.***
ES-1	Executive Summary	***All of the East County agencies are located within the boundaries of the statutory Delta***, the largest estuary on the west coast of North and South America. As such, they recognize the importance of protecting, restoring, and enhancing this environmentally sensitive ecosystem. In addition, while the East County agencies are not projecting future water supply shortfalls under normal hydrologic conditions, the rapidly growing population in the region makes meeting future water supply needs a challenge in dry years.
ES-4	Executive Summary	Regional projects that improve water supply reliability and water quality, ***reduce dependence on imported water***, assist in achieving the regional objectives, provide multiple benefits, and eliminate or reduce pollution in sensitive habitat areas and areas of special biological significance ***were identified as short- or long-term (priorities)***.
2-6	Geographic Boundaries	….The region is bounded on the north and east by the San Joaquin River and Old River, and the associated maze of waterways effectively isolates East County from the Central Valley region. ***The entire region derives its water supply from the Delta and drains to the Delta*** primarily through the Marsh Creek, Kirker Creek, and Kellogg Creek watersheds….
2-8	Delta Partners	….As shown in Figure 2-3, ***the agencies participating in this effort are all located within the statutory Sacramento-San Joaquin Delta*** (Delta)….Located within the Delta boundaries, and with Delta water as a primary source of drinking water for the region, ***the agencies in East County share a common commitment to protect and restore the Delta water quality and environment***….
2-9	Common Water Supply, Common Challenges	***Three of the water suppliers*** included in this Regional Water Management Group (City of Pittsburg, City of Antioch, DWD) ***purchase untreated Sacramento-San Joaquin Delta supplies from CCWD. Brentwood has a Delta surface supply*** purchased from ECCID that is diverted by CCWD at its Delta intakes. Also, CCWD serves a portion of Brentwood that lies within the CCWD boundaries….. ***CCWD and their wholesale customer agencies all face similar potential water quality issues and potential supply reliability challenges that stem from reliance on the Delta as a primary source of supply.*** Regional partnerships to maximize water quality and supply reliability, while protecting the sensitive Delta ecosystem, can provide a common benefit to all of these agencies while minimizing expense….

Page	Section	Excerpt
2-9	Projected Growth	The agencies participating in this document are faced with the challenge of rapid growth. The overall population of East Contra Costa is projected to increase by 146 million people (24%) between 2000 and 2020….Due to the rapid increase in population projected for the region, ***agencies need to implement innovative water management strategies to maximize water supplies and effectively manage demand***, as well as increasing wastewater treatment and disposal capabilities. In addition, ***agencies need to plan carefully to ensure the needs of the growing population are met without sacrificing the needs of the sensitive ecosystem.***
2-16	Social, Cultural, and Economic Characteristics	***Because of the region's dependence upon Delta water supplies, events that threaten the quality or quantity of this supply, such as droughts, water quality events and levee failures, could have significant ramifications on the economic viability of the entire region.***
2-24	Delta Water Quality	***Delta water quality is highly variable depending upon the season, the water year, and the intake location.*** During dry years and seasons Delta supplies contain high concentrations of total dissolved solids (TDS), chloride and bromide. Total organic carbon (TOC) concentrations in Delta supplies are also highly variable, with increases generally corresponding to periods of increased runoff. These concerns are discussed in detail in the Delta Region Drinking Water Quality Management Plan (DRDWQMP). The Los Vaqueros Reservoir is owned and operated by CCWD, and is used to improve the water quality delivered to its customers. Water is pumped into Los Vaqueros during spring and early summer months when Delta water quality good. During the late summer and fall, when Delta water quality is poor, Delta supplies are blended with the high quality water stored in Los Vaqueros Reservoir to improve the water quality delivered to CCWD's untreated and treated water customers. The quality of Delta water is dependent on maintenance of the Delta levee system as well as land and water management activities throughout the Delta and its larger watershed. ***Failure of the Delta levee system from flooding or seismic events could dramatically increase levels of chloride, bromide, and TOC and potentially render the water supply unusable for municipal or agricultural purposes.*** Similarly, changes in Delta land-use and water management practices, including many identified by CALFED, could increase levels of undesirable constituents at East County intake locations. ***East County is particularly vulnerable to these changes since it has no other reliable sources of drinking water.***
3-1	Table 3-1 Regional Planning Objectives	***Objective*** (***listed under Water Supply heading): Maximize Use of Local Supplies/Reduce Dependence on Imported Supplies***
3-5	Table 3-2 East County Water	[Groundwater Management:] Groundwater management is a critical part of maximizing supplies within the region….East County agencies are continuing to evaluate projects and programs with the ***goal of optimizing use of***

Page	Section	Excerpt
	Management Strategies	***groundwater within the region***. [Water Conservation:] Water Conservation Water conservation is an important component of the East County approach to water management….***The agencies are committed to ongoing demand management as a cornerstone to meeting future supply needs***. [Water Recycling:] East County is a leader in recycled water production. Continued ***commitment to water reuse is a major component of the future water supply programs*** of these agencies. Many projects and programs within the study area focus on water reuse. [Desalination:] Desalination is regarded as a ***potential water supply alternative*** for the participating agencies. A feasibility-level project has been proposed to evaluate the feasibility of brackish water desalination as a viable water supply alternative within the region. [Imported Supplies:] In general, imported water refers to Delta supplies which are conveyed to water users throughout California via the State Water Project and Central Valley Project. Located within the statutory Delta, the East County agencies' Delta supplies are not imported. Use of additional Delta supplies was evaluated in the ECWSMS and the FWSS. ***Additional Delta supplies are not being pursued*** at this time***.***
3-8	Water Supply Reliability	***Water supply reliability is a prime concern for the participating agencies, which obtain the majority of their supplies from the Sacramento-San Joaquin Delta***. ***The reliability of Delta supplies varies significantly with hydrology***, and in drought years, when they are most desperately needed, Delta supplies may be severely restricted. In addition, ***potential levee failures and subsidence threaten the reliability of Delta supplies. Water supply reliability is a primary goal of the participating agencies***, and a variety of water management techniques have been explored and innovative techniques implemented with the goal of improving water supply reliability.
3-8	Dry Year Supply Reliability	With the exception of the City of Brentwood, ***all of the participating water agencies purchase untreated water from CCWD***. The City of Brentwood has an interim contract with CCWD to receive treated water, and receives untreated water supplies from ECCID via CCWD. ***CCWD is a Central Valley Project (CVP) contractor, and relies on the Delta for the majority of its supply. Delta supplies are dependent on hydrology, and deliveries to CCWD can be reduced during regulatory restricted or drought years.*** The Central Valley Project Improvement Act (CVPIA) further reduced the reliability of these supplies by as much as 15%, potentially reducing the amount supplied to

Page	Section	Excerpt
		CCWD from their 195,000 AFY contract amount to 166,000 AFY in normal years, and less in dry years. ***CCWD and its retail agencies rely heavily on the Delta to meet water supply needs.*** As discussed in section 2 of the Phase II East County Water Supply Management Study, ***factors such as environmental water needs, changing water quality standards, and the overall vulnerability of the Delta all threaten the reliability of these agencies, reducing their ability to meet their customers' water needs.*** The agencies of East County have conducted numerous coordinated regional planning efforts with a variety of objectives, including improved supply reliability. One of the primary documents supporting this effort, the Phase II East County Water Supply Management Study, presents a detailed analysis of the water supply reliability outlook for East County. In addition, the Study ***evaluates 30 alternative strategies for pooling local resources to maximize regional supply reliability.*** Potential sources of water supply evaluated include: • In-county surface water • In-county groundwater • Conjunctive use development • Reclaimed water • Outside-county water • Water Conservation Another primary supporting document to this Plan, the Future Water Supply Study (and 2002 Update), provides detailed information regarding the water supply and water demand outlook for all of the CCWD Planning Area through the year 2050. The FWSS included a Preferred Alternative and Implementation Plan for improving supply reliability throughout the CCWD Planning Area through the year 2040. This ***alternative identified actions to be taken including implementation of conservation measures***, purchase of surface water transfers, water banking, and spot transfers, as necessary. Implementing the Preferred Alternative will provide improved drought reliability in the near term, while positioning CCWD to meet projected demands through the year 2040.
3-12	Groundwater Management	***Groundwater is a valuable, hydrology-resistant supply.*** Of the participating agencies, ECCID, the City of Brentwood, and Hotchkiss Tract and Bethel Island, which fall within the DWD sphere of influence, rely primarily on groundwater supplies. DWD and the City of Pittsburg both supplement their supplies with groundwater. The agencies of East County recognize groundwater management and the development of additional groundwater supplies as vital actions in developing a sound water management strategy for a rapidly growing area. Furthermore, ***as Delta water supply users, they understand the importance of drought-resistant supplies, and appreciate the supply reliability benefit posed by groundwater supplies, particularly in dry years***….

Page	Section	Excerpt
		As additional studies are performed and safe yields of the groundwater basins within East County are identified, groundwater supplies are likely to become increasingly important to the water management strategies of the participating agencies. Pursuit of these and other groundwater management projects will allow East County to optimize use of valuable, drought-resistant groundwater supplies, ***potentially offsetting reliance on less reliable, imported surface water supplies***. Several groundwater management projects are currently being proposed within East County. These include: • DWD Well Utilization Project Phase I and Phase II • City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan • Knightsen Biofilter Project
3-15	Water Conservation	The participating agencies recognize that effective ***demand management is a key aspect of meeting future water supply needs***….East County water agencies anticipate additional water savings from demand management in the future, attributable to continued commitment to aggressive and innovative water conservation programs. The Future Water Supply Study identifies an effective conservation program that includes a suite of initiatives, including: • System operations and loss reductions: System upgrades that reduce water losses from seepage, evaporation and leaks, including canal lining, leak detection and repair, corrosion control programs; • Public information and education: Programs to promote public awareness of water conservation, including media campaigns, workshops, school presentations, newsletters, bill inserts, speakers to community groups, coordination with government agencies, industry and public interest groups; • Pricing and incentives: Water rate structure that provides customers with an incentive for keeping water use low; • Ordinances and plan reviews: Model landscape ordinance and water waste prohibition regulations; • Audits: Audits of all major customer categories (Single and Multi-family residential, Commercial and Light Industrial, Landscape and Industrial) encompassing distribution and installation of interior plumbing features, leak detection, review of irrigation system performance, preparation of personalized irrigation schedules, and distribution of educational information; • Ultra Low Flow Toilet (ULFT) Rebate Program: Rebate program for replacement of nonefficient toilets with ULFTs. …. Conservation programs are integral to the East County agencies' abilities to meet the future water supply needs

Page	Section	Excerpt
		of the region. ***Like water recycling, (conservation) in East County has the additional benefit of improving delivered water quality within the region by reducing the amount of potable water required by the region, allowing a higher fraction of high quality Los Vaqueros Reservoir supplies to be delivered.*** Agencies will continue to explore opportunities to expand upon conservation efforts as new water saving technologies emerge. In addition, the City of Brentwood is currently evaluating an Irrigation Controller Replacement Program for near-term implementation, with the goal of reducing outdoor water use in the City.
3-16	Water Quality Protection and Improvement	….CCWD and its untreated water customers (the City of Antioch, the City of Brentwood, the City of Pittsburg, and DWD) ***receive Delta supplies, which are highly variable by season and hydrology***. In addition, Delta water quality can vary significantly with intake location. These supplies generally contain high concentrations of TDS, chloride and bromide, and this effect is most pronounced in late summer and early fall. TOC concentrations in Delta supplies are also generally high, and exhibit significant variability, making it difficult to tailor treatment methods appropriately. CCWD conveys untreated water supplies to the Cities of Pittsburg and Antioch and to DWD through the Contra Costa Canal. During conveyance, groundwater seepage into the canal results in further water quality degradation. In addition, local groundwater supplies within the county have exhibited high concentrations of TDS, chloride, hardness, nitrate, and arsenic. As development continues to threaten source water quality and water quality regulations continue to become more stringent, attention to water quality protection and improvement becomes increasingly more important…. In addition, CCWD operates the Los Vaqueros Reservoir to improve delivered water quality for their untreated and treated water customers. By pumping water into the reservoir during periods of good Delta water quality, and storing this high quality water to be blended with Delta supplies during periods of poorer water quality in the Delta, Los Vaqueros Reservoir assists CCWD in providing high quality supplies to its untreated and treated water customers. ***All projects that increase available water supply or reduce demands in East County (e.g., groundwater supply projects, recycled water projects, conservation measures), can reduce the quantity of Delta water required, and increase the proportion of delivered Los Vaqueros supplies, improving overall water quality within the region***….
3-18	Water Recycling	….***East County water agencies recognize that recycled water is a reliable, drought-proof supply that can reduce dependence on more vulnerable surface water supplies***….. Several water recycling projects are currently being considered for implementation in the County, including: • Antioch Recycled Water Implementation • City of Brentwood Non-Potable Distribution System Phase II • City of Brentwood Non-Potable Distribution System Phase III • Caltrans Recycled Water Implementation

Page	Section	Excerpt
		• Pittsburg Recycled Water Implementation
3-19	Desalination	As advancements in membrane technology continue to increase the viability of desalination projects, ***desalination facilities become more and more attractive as year-round, drought-resistant supply sources….***The FWSS evaluated the use of desalination at Mallard Slough as a potential firm supply source, as well as an intermittent, supplemental supply source in the event of drought or regulatory restrictions…. ongoing evaluation of this alternative was recommended with FWSS updates, and with advances in technology. In another effort, CCWD, along with three other San Francisco Bay water agencies, has completed the first phase of the Regional Desalination Project (RDP). The RDP is aimed at evaluating the feasibility of a regional desalination for meeting customer demands…. ***East County water agencies will continue to consider new desalination projects as potential supply sources in future years.*** The DDSD Feasibility-Level Desalination Project is currently being considered for implementation in East County. This project would involve construction of a 5-mgd reverse osmosis desalination facility at DDSD.
3-20	Imported Water	….As discussed in the Supply Reliability portion of this section, CCWD is a CVP contractor and currently relies heavily on Delta supplies. With the exception of the City of Brentwood, all of the East County water agencies purchase untreated water from CCWD. Depending on hydrology, imported water deliveries to CCWD can be substantially reduced during regulatory restricted or drought years. Surface water supplies, including Delta supplies and surface water storage, are important water management components for the agencies in East County, used to meet the majority of demands within the region. Surface water supplies are hydrology-dependent, and reduced yield is expected in drier years. The agencies of East County are ***currently evaluating a variety of alternatives to supplement their water management portfolios and address some of the issues related to imported surface water supplies.***
3-23	Table 3-3 Objectives and Water Management Strategies	***Water Supply Objective: Maximize Use of Local Supplies/Reduce Dependence on Imported Supplies***
3-26	East County Water Management Projects and Programs	…. a subset of truly integrated, multi-benefit projects that address the water supply, water quality and ecosystem needs of the region. … • Antioch ***Recycled Water Implementation***. DDSD and the City of Antioch have recently completed a recycled water facilities plan that identified a recommended urban reuse project that would provide up to 530 AFY of recycled water irrigation supply to several municipal parks and a local municipal golf course….

Page	Section	Excerpt
		• City of Brentwood ***Irrigation Controller Replacement Program***. This project would involve replacement of existing standard irrigation controllers in residences with Intelligent Irrigation Controllers that utilize evapotranspiration, plant and soil type and micro climate to determine the irrigation schedule…. • City of Brentwood ***Non-Potable Distribution System*** Phase II. This project would involve design and installation of a trunk reclaimed water pipeline, storage reservoir and increase the pumping capacity at the existing pump station. … • City of Brentwood ***Non-Potable Distribution System*** Phase III. This project would extend the recycled water distribution system described in Phase II for irrigation purposes throughout Brentwood…. • Beacon West ***Well Head Arsenic Treatment***. This project is designed to reduce the current 35 ug/l arsenic levels from the groundwater serving the 30 housing units in the Beacon West complex on Bethel Island (served by DWD) to below the 10ug/l standard that will take effect January 2006…. • Caltrans ***Recycled Water Implementation***. DDSD is currently completing a recycled water master plan for Caltrans, which will identify a recommended alternative for implementation…. • DWD ***Well Utilization Project*** Phase I and Phase II. This project will provide up to 3-mgd of additional supply from groundwater within the DWD service area. Current DWD maximum day demand is 9-mgd…. • City of Pittsburg ***Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan***. This project will involve exploration of new groundwater sources and expansion of groundwater use in the City of Pittsburg to supplement water supply from the Delta…. • Pittsburg ***Recycled Water Implementation***. DDSD recently completed a recycled water master plan for the City of Pittsburg. This Plan included a recommended alternative for implementation which includes improvements designed to provide 615 AFY of recycled water supply to City Park, City Hotel, Stoneman Park, and the Delta View Golf Course…. • Willow Park Marina ***Well Head Treatment***. This project is designed to reduce the current 13 ug/l arsenic levels from the groundwater serving the 162 housing units in the Willow Park Marina complex on Bethel Island (served by DWD) to below the 10 ug/l standard that will take effect January 2006….
3-32	Regional Priorities, Table 3-5	Short-term priorities include: Antioch ***Recycled Water*** Implementation; City of Brentwood Chloramination of ***Wells***; City of Brentwood ***Irrigation Controller*** Replacement Program; City of Brentwood ***Non-Potable Water Distribution System*** - Phase II; City of Pittsburg ***Groundwater*** Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan; Diablo Water District ***Well Utilization*** Project Phase 1 and 2; Pittsburg ***Recycled Water*** Implementation. Long-term priorities

Page	Section	Excerpt
		include: Beacon West ***Well*** Head Arsenic Treatment; Caltrans ***Recycled Water*** Implementation; DDSD Feasibility-Level ***Desalination*** Plant; Willow Park Marina ***Well*** Head Arsenic Treatment
3-33	Short-Term Projects	Implementation of projects included in the Plan will be phased, based on short-term and long-term project implementation. Short-term projects were identified by agencies as projects that: • Improve water supply reliability • Improve water quality • ***Reduce dependence on imported water*** • Assist in achieving the regional objectives • Provide multiple benefits • Eliminate or reduce pollution in sensitive habitat areas and areas of special biological significance
3-33	Prioritization	As part of the integrated regional planning process, the East County agencies developed a procedure for prioritizing both short- and long-term projects. As detailed in Appendix C-1, the East County agencies constructed a system for prioritizing projects that assigned ***highest priority to those projects that were found to most effectively address each of the regional Objectives***….The eleven projects identified as the highest priority for short-term implementation by the East County agencies are…. • Antioch ***Recycled Water*** Implementation…. • Diablo Water District ***Well*** Utilization Project Phase 1 and 2…. • Pittsburg ***Recycled Water*** Implementation…. • City of Pittsburg ***Groundwater*** Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan
4-1	Implementation	This Plan will be implemented through short- and long-term implementation of a series of projects and programs designed to ***achieve the regional objectives***.
4-10	Table 4-2 Anticipated Benefits and Potential Impacts from Plan Implementation	<u>Cited Project benefits</u> • Antioch Recycled Water Implementation: ***Improved water supply reliability & water use efficiency***…. ***reducing the amount of potable water required by the region***…. • City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan Project: ***Greater water supply availability and drought protection***….***Reduction in water demand on Contra Costa Canal system and Delta***…. • Diablo Water District Well Utilization Project Phase 1 and 2: ….Will ***leave more water in the Delta*** for the

Page	Section	Excerpt
		Environment. Will help ***relieve demand on surface water supplies***…. ***reducing the amount of potable water required by the region***…. • Pittsburg Recycled Water Implementation: ***Improved water supply reliability***… ***reducing the amount of potable water required by the region***…. • City of Brentwood Chloramination of Wells: ***Reduces the amount of water to be diverted from the delta.*** • City of Brentwood Irrigation Controller Replacement Program: ***Reduces the overall water demand*** due to irrigation equating to ***less water needed from the ground or the Delta….*** • City of Brentwood Non-Potable Water Distribution System - Phase II: ***Minimize the water requirements from the… Delta….*** • Caltrans Recycled Water Implementation: ***Improved water supply reliability & water use efficiency***… ***reducing the amount of potable water required by the region***…. • City of Brentwood Non-Potable Water Distribution System - Phase III: ***Minimize the water requirements from the… Delta….*** • DDSD Feasibility-Level Desalination Plant: This study could ***establish the feasibility of a regional brackish water desalination*** facility….
4-15	Potential Impacts Associated with Non-Implementation of Short-Term Priority Projects	• City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan: ***additional demands on limited Delta supplies***…. • Diablo Water District Well Utilization Project Phase 1 and 2: ***significant demands on Delta supplies***….
4-29	Reduce Conflict between Water Users	• Antioch Recycled Water Implementation. This project will reduce STATEWIDE conflicts by ***reducing the City of Antioch's overall dependence on Delta water supplies*** by 531 AFY. • Antioch Water Treatment Plant Projects. This project will ***reduce the City of Antioch's overall dependence on Delta water supply*** by approximately 1 million gallons per day (mgd)…. • Diablo Water District Well Utilization Project Phase 1 and 2. This project will ***reduce DWD's overall dependence on Delta water supplies*** by 1,000 AFY by developing local groundwater supplies…. • City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan. This project will ***reduce the City of Pittsburg's overall dependence on Delta water supply*** by 1-2 mgd….

Page	Section	Excerpt
		• Pittsburg Recycled Water Implementation. This project will reduce STATEWIDE conflicts by ***reducing the City of Pittsburg's overall dependence on Delta water supplies*** by 615 AFY….
4-46	Assist in Achieving CALFED Bay-Delta Program Objectives	• Antioch Recycled Water Implementation…. It will enhance water supply reliability by expanding recycled water production and ***lessening the amount of Delta water diverted*** by the Contra Costa Water District. • Antioch Water Treatment Plant Projects. This project will increase water supply reliability by ***reducing demand on the Delta*** by approximately 1 mgd…. • Diablo Water District Well Utilization Project Phase 1 and 2….This project will…***decrease demand on Delta water supplies***…. • Pittsburg Recycled Water Implementation….It will enhance water supply reliability by expanding recycled water production and ***lessening the amount of Delta water diverted*** by the Contra Costa Water District….
C1-2	Prioritization Criteria and Subcriteria	Three main criteria were used to prioritize projects, based on their applicability to regional integrated planning: • Regional Objectives • Proposition 50 Chapter 8 Program Preferences • Other Considerations ….[regional planning objectives cited under the Water Supply Reliability Category:] ***Maximize Use of Local Supplies/Reduce Dependence on Imported Supplies***
C1-2	Criteria Weighting, Regional Objectives	The ability of projects to meet Regional Objectives was determined to be an important factor in prioritizing projects. ***Regional objectives are particularly important in the prioritization process*** because they reflect the common goals established by the participating agencies. As such, the criterion of Regional Objectives was assigned 50% of the overall score.
C1-5	Criteria Weighting, Program Preferences	***Improves Water Supply Reliability.*** This subcriterion was mentioned in the Program Preferences and twice in the Program Intent, and was assigned a rating of 3x (10%).